

East Branch Dam Safety Modification Project

PUBLIC INFORMATION MEETING
March 2, 2020
Johnsonburg Area High School

Johnsonburg, PA

U.S. Army Corps of Engineers
Pittsburgh District



**US Army Corps
of Engineers®**





AGENDA

- **Opening Remarks** – District Commander, Col. Andrew J. Short
- **Project History** – Project Manager, Terry Durbin
- **Construction Update** – Area Engineer, Denise Polizzano
- **Estimated Timeline To Completion** – Area Engineer, Denise Polizzano
- **East Branch Lake Facilities** – Northern Area Operations Project Manager, Evan Skornick
- **Emergency Management** – Elk County Emergency Services Director, Mike McAllister
- **East Branch Lake Fishery** – Pennsylvania Fish and Boat Commission, Brian Ensign & Mike Swartz
- **Wrap Up & Questions** – MEGA Project Program Manager, Steve Fritz



PROJECT HISTORY

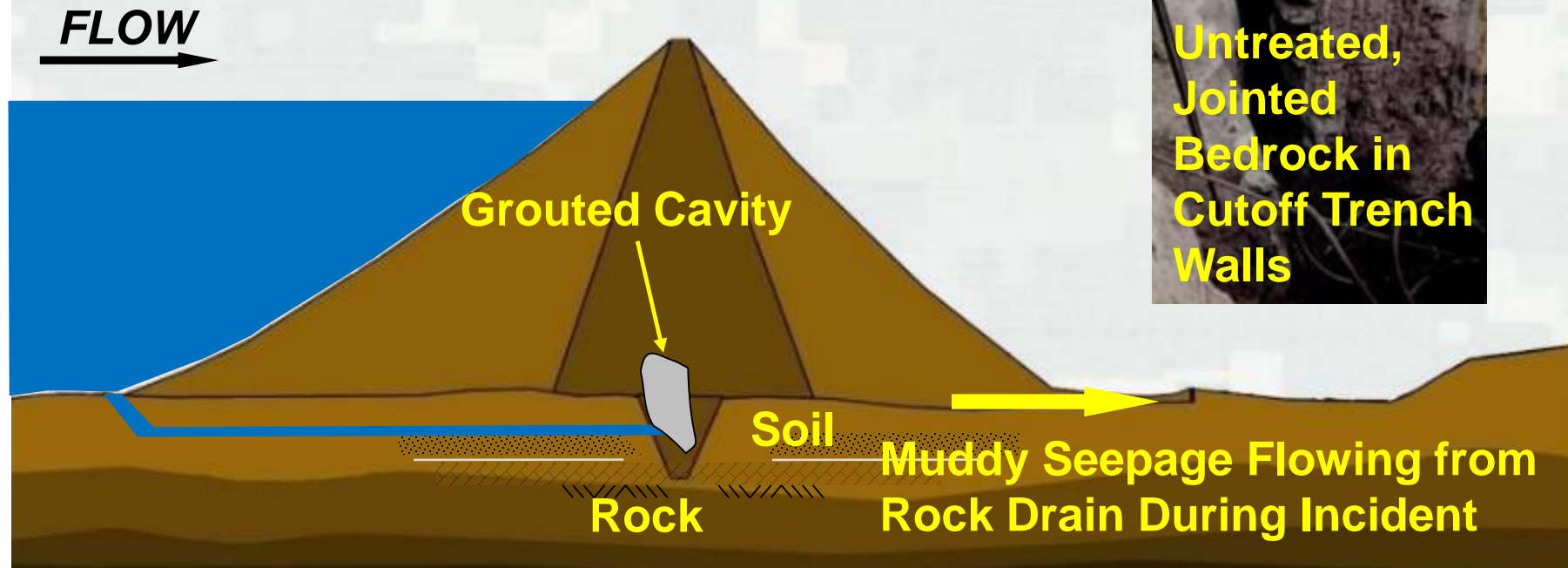
- **1947 to 1952** – Dam Construction
- **1957** – Emergency Repair
- **1957 to 2008** – Operate/ Monitor Dam
- **2008 to present** – Interim Risk Reduction
- **2008 to 2010** – Dam Safety Study
- **2010 to 2014** – Project Engineering & Design
- **26 Aug 2014** – Cutoff Wall Contract Award
- **17 Sep 2014** – Notice To Proceed



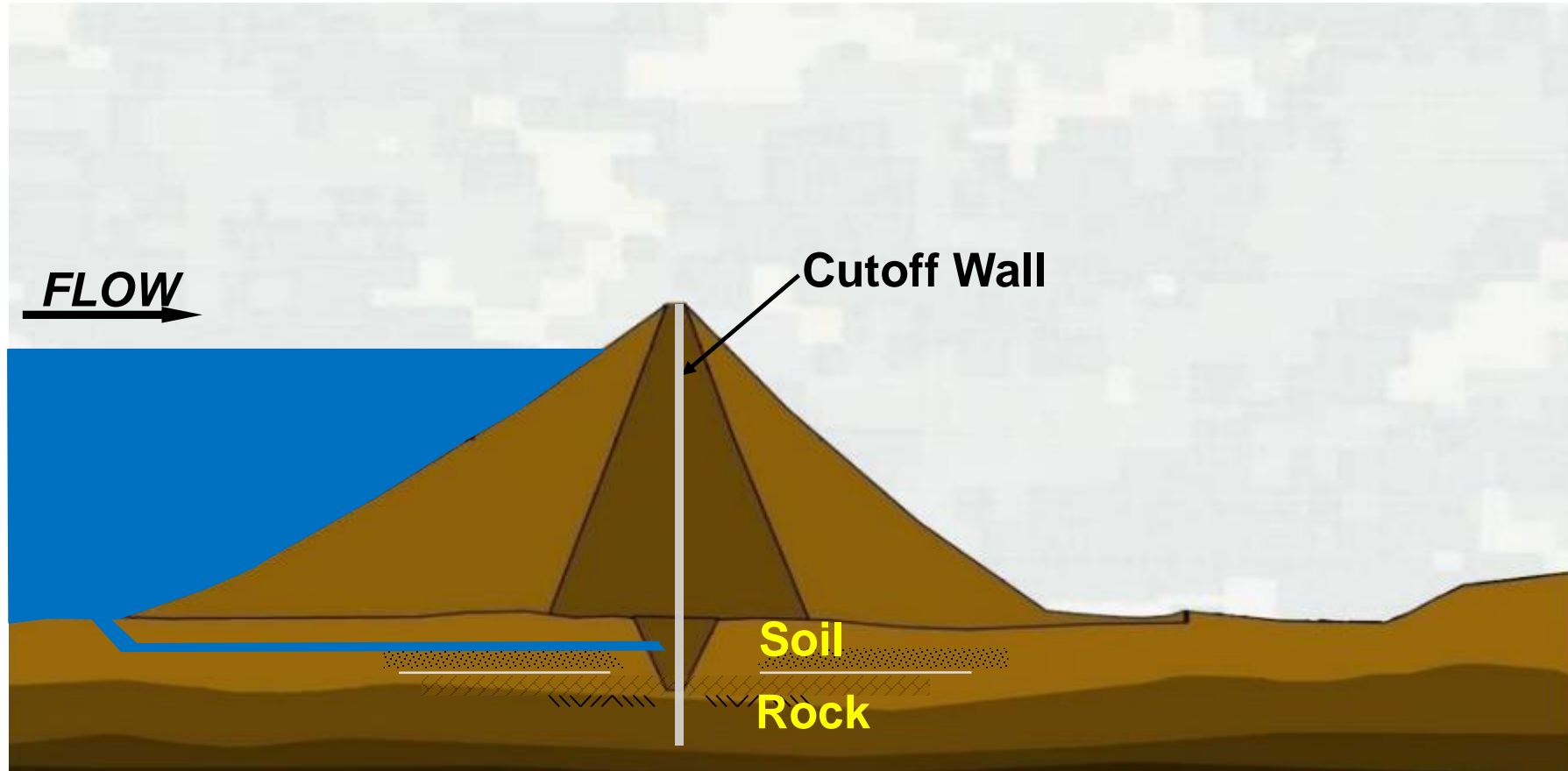
PROJECT HISTORY

1957 EMERGENCY REPAIR

Dam failure averted in 1957, but risk for re-initiation of internal erosion remained.



CUTOFF WALL ORIENTATION



CONSTRUCTION UPDATE



CONSTRUCTION UPDATE

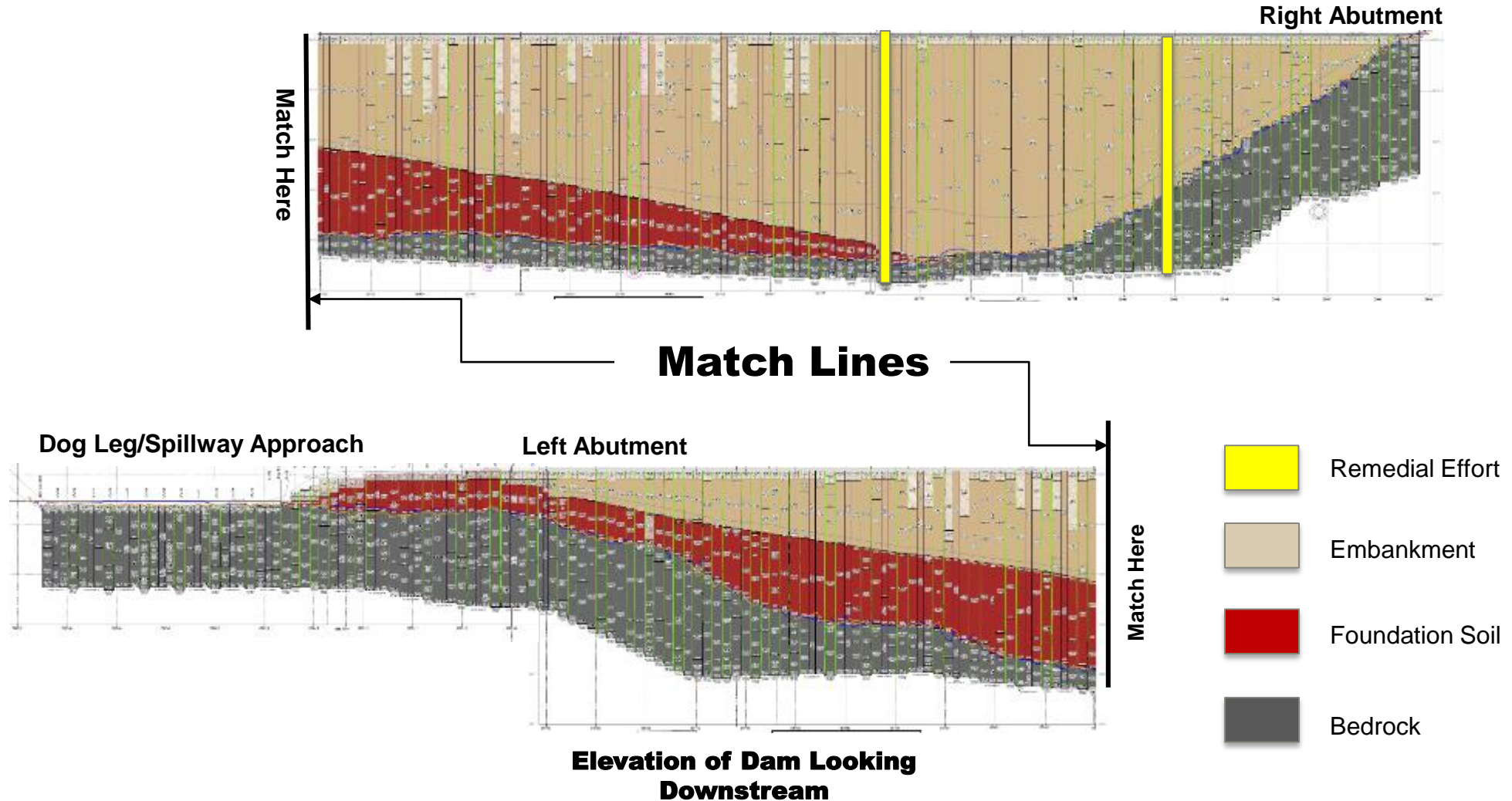
CUTOFF WALL

- Completed 16 August 2019
- 149 Panels up to 250' Depth
- ~ 55,000 CY of Tremie Concrete 2,200 LF of +24" Continuous Vertical Concrete Cutoff Wall
- Drilled 14,700 LF of 60" Diameter Steel Casing



CONSTRUCTION UPDATE

CUTOFF WALL PANEL LAYOUT



CONSTRUCTION UPDATE

CUTOFF WALL VERIFICATION PANELS & JOINTS





CONSTRUCTION UPDATE

CUTOFF WALL VERIFICATION PANELS & JOINTS

P-25/C-26 Joint Verification Hole

PVH 0901 ~133 ft.

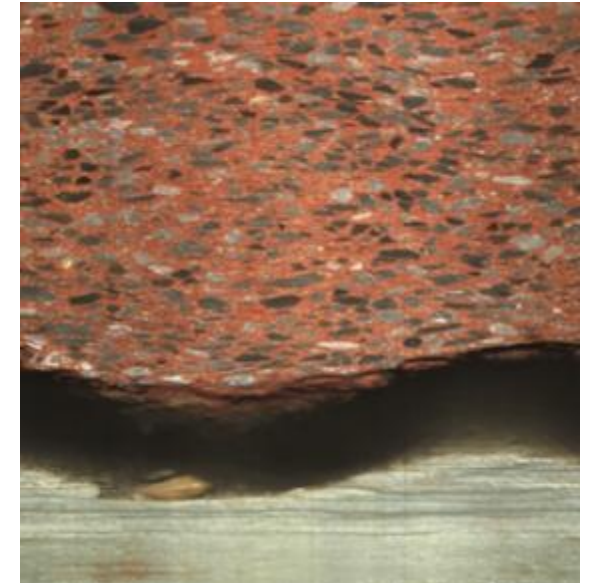


C-48 Panel Verification and Supplemental Holes

PVH 1220 ~241 ft

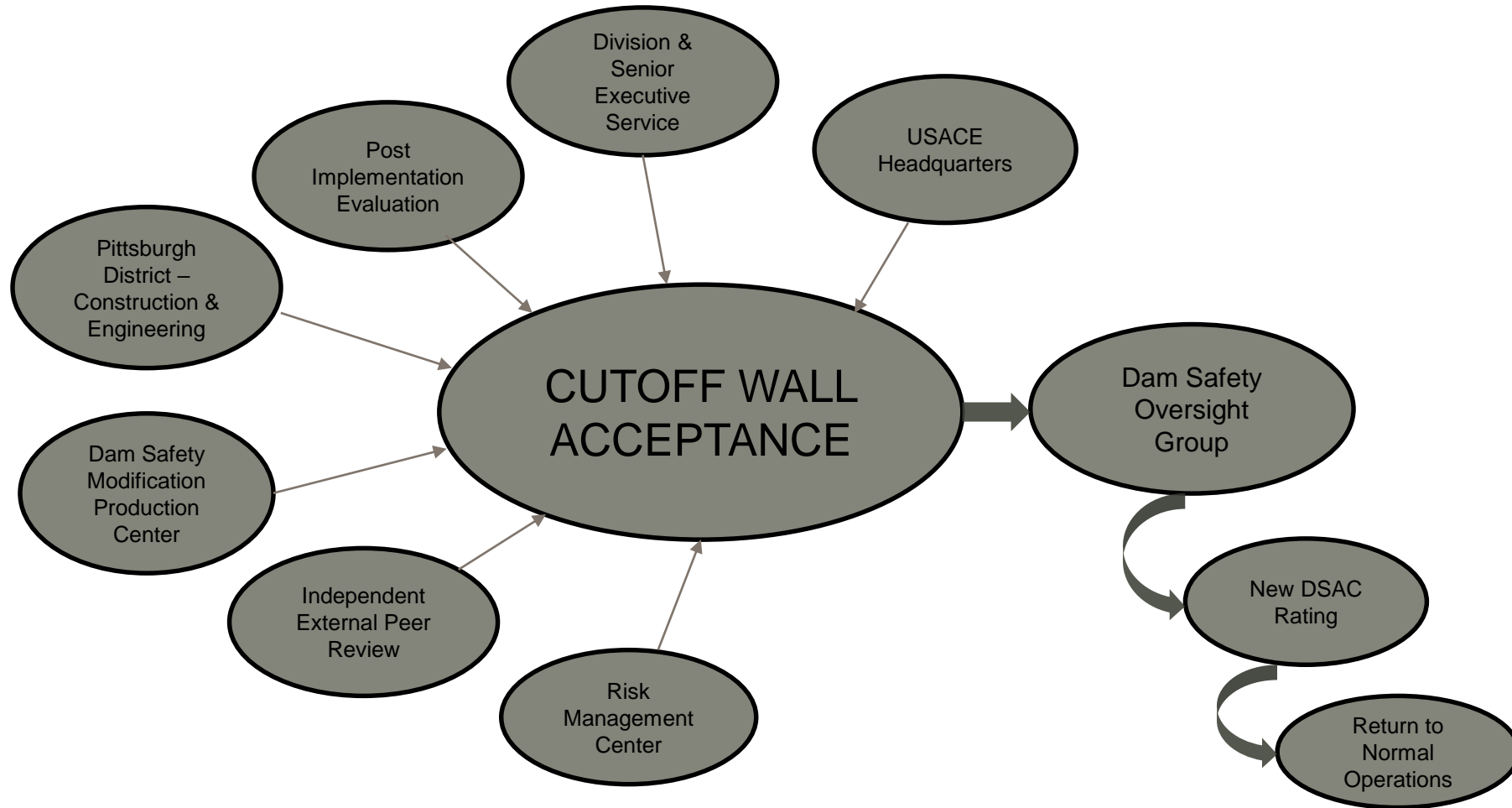


PVH 1221 ~245 ft



CONSTRUCTION UPDATE

REQUIRED COORDINATION



CONSTRUCTION UPDATE

Completed Activities

- Drilling & Grouting Operations
- 2 Demonstration Sections
- Secant Construction
- Cutoff Wall



Remaining Activities

- Finish Remedial Work
- Removal of Work Platform
- Restoration of Embankment
- Removal of Equipment & Trailers
- Paving & Misc. Site Restoration



CONSTRUCTION UPDATE

TRUCK TRAFFIC

- Amount of traffic is dependent upon temporary stockpile location
- Road Permits & Bonds are in accordance with PennDOT and local requirements
- 210,000 Tons of R4 Stone to be removed
- 56,000 Tons of R6 to be placed



CONSTRUCTION UPDATE

PROJECT MONITORING

- Automated Instrumentation
 - * Piezometers
 - * Weirs
 - * Inclinometers
- Instrumentation Manual Readings
 - * Piezometers
 - * Weirs
 - * Inclinometers
- Visual Inspection
- East Branch Project Emergency Action Plan
- Periodic Inspections
- Periodic Assessments



OTHER CONSTRUCTION CONTRACTS

COMPLETED:

- Roof Replacement
- RM's Office, Maintenance Building & Boat Launch Restroom
 - Contractor: Armitage Architecture, P.C.
 - Completed 29 April 2019

ON-GOING:

- Replacement of Gate Operating Machinery
 - Contractor: Alltech Engineering Corp.
 - Completion 24 October 2021

UPCOMING:






- Resident Engineer Office Renovations
- Development of Interpretive Center
- Well #1 Treatment System Upgrades

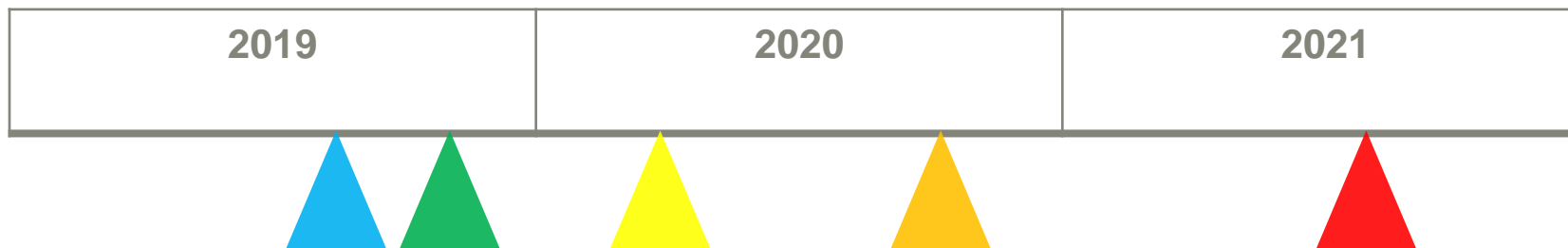




CONSTRUCTION UPDATE

DAM SAFETY PROJECT ESTIMATED TIMELINE TO COMPLETION

Activity	Timeframe
Cutoff Wall physical completion	August 2019 
Assessment of Cutoff Wall	Fall 2019 
Correction of Defects	Winter 2020 
Removal of work platform	Summer 2020 
Project Complete	2021 



EAST BRANCH FACILITIES OPERATIONS

WHAT'S NEW?

- EAST BRANCH FACILITIES RE-OPENING PLANNED FOR MID-APRIL 2021
- RECENT IMPROVEMENTS
 - New roofs
 - Improved outflow fishing trail
 - Vegetation management
- PLANNED IMPROVEMENTS
 - Native wildflower pollinator plots
 - Campground upgrades
 - Office re-purposing



RECENT IMPROVEMENTS

ROOF REPLACEMENTS



RECENT IMPROVEMENTS

OUTFLOW FISHING TRAIL





RECENT IMPROVEMENTS

VEGETATION GROWTH MANAGEMENT



PLANNED IMPROVEMENTS

NATIVE WILDFLOWER POLLINATOR PLAN



PLANNED IMPROVEMENTS

CAMPGROUND CABINS



- Goal is to start with 4 cabins
- Specs developed; to announce contract

PLANNED IMPROVEMENTS

REPURPOSING EAST BRANCH BUILDINGS



INTERPRETIVE CENTER PROCURED DISPLAYS



INTERPRETIVE CENTER CONCEPTUAL IDEAS



INTERPRETIVE CENTER CONCEPTUAL IDEAS



CORPS OF ENGINEERS

U. S. ARMY

PITTSBURGH, PA. DISTRICT

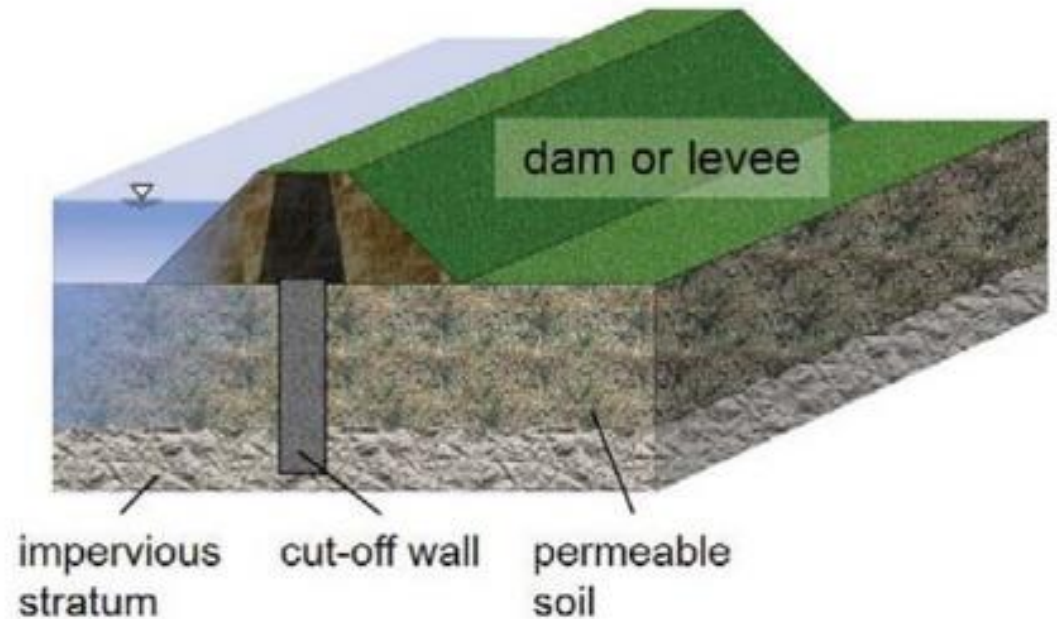
EAST BRANCH RESERVOIR DAM, CLARION RIVER

LOOKING UPSTREAM FROM LEFT BANK ABUTMENT

CONTRACTOR: HUNKIN CONKEY CONSTRUCTION CO., W-36-058-ENG-2583, CONTRACT DATE 30 JULY 1949

7 JUNE 1951

NO. 29868





EAST BRANCH LAKE RIBBON CUTTING



EMERGENCY MANAGEMENT





EMERGENCY MANAGEMENT

MR. MIKE MCALLISTER, ELK COUNTY EMERGENCY MANAGER

Future Activities:

- Swift 911 warning system ongoing registration
- Continued planning meeting with Jones, Johnsonburg, and Ridgway Emergency Managers
- Co-ordination of County and Twp. Emergency Action Plans for Dam Failure Emergency Notification and Evacuation
- Exercising of above Emergency Action Plans



EMERGENCY MANAGEMENT

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EMERGENCY MANAGEMENT

SWIFT 911 MOBILE APP



- ANDROID
- APPLE
- WINDOWS

East Branch Clarion River Lake

Warm & Coldwater Fishery - Update



Brian A. Ensign
Pennsylvania Fish & Boat Commission
Division of Fisheries Management, Area 2

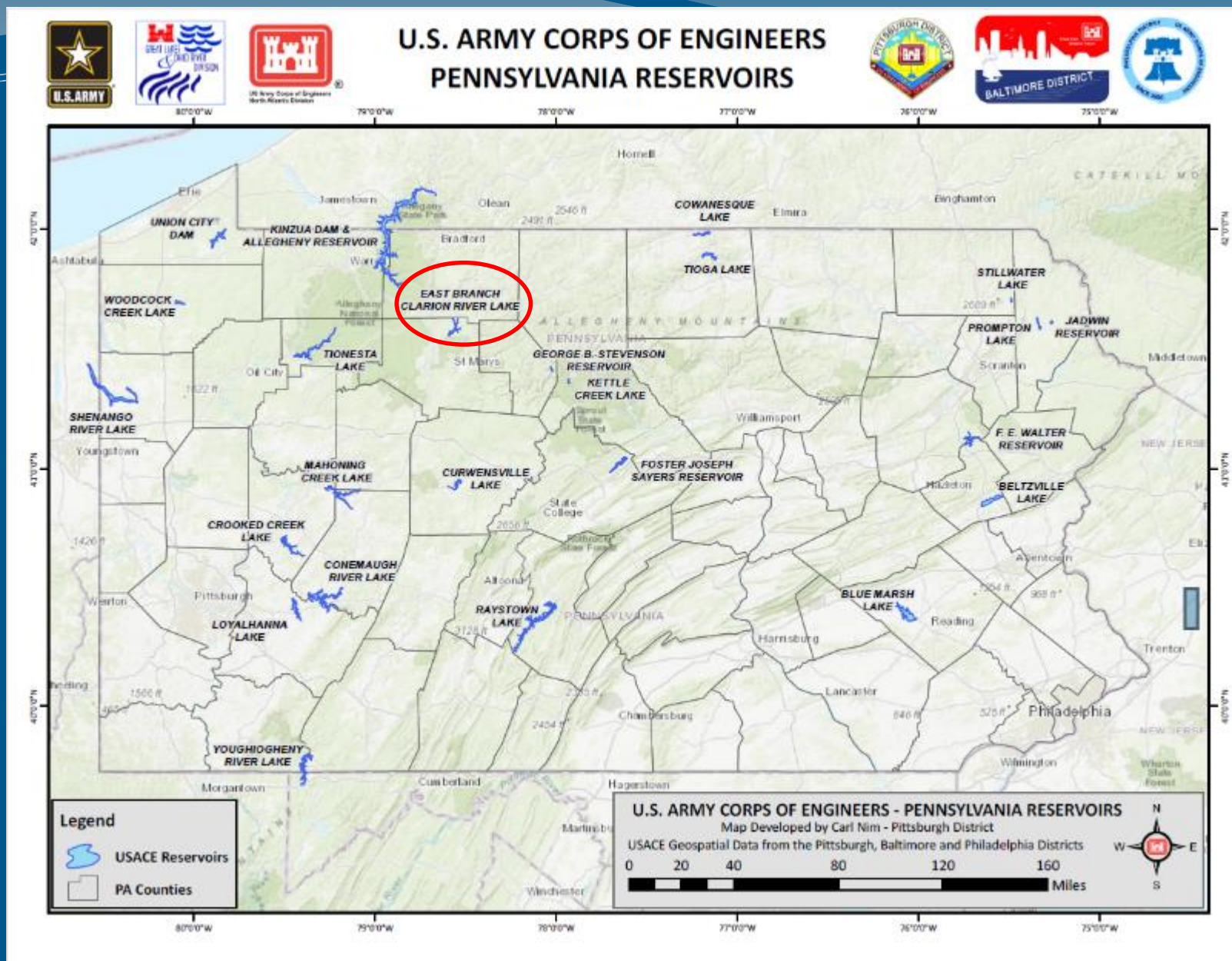


Mission: *To protect, conserve, and enhance the Commonwealth's aquatic resources and provide fishing and boating opportunities*

Presentation Outline

- PFBC Stockings
- 2016 April/ May Gill Netting and Night Boat Electrofishing Results
- Age and Growth statistics
- Water Quality and Pool Elevation
- Future Surveys





*East Branch Lake ranks among the 11th largest, at approximately 1,161 acres, of the 25 CORE lakes within PA in terms of maximum conservation pool per surface area.

**One of only 2 inland lakes in PA currently stocked with Lake Trout (Lake Erie); Allegheny Reservoir – Surplus stockings



Stocked and Non-Stocked Fish Species

Annual Stockings:

- Walleye – 1,000,000 fry (1988 - Present)
- Lake Trout – 3,000 fingerlings (1977 – Present)
- Brook Trout – 50,000 fingerlings (1971 – present)
- Tiger Muskellunge – discontinued in 2017



Natural Reproduction:

- Smallmouth Bass
- Northern Pike
- Yellow Perch
- Rock Bass
- Bluegill
- Brown Bullhead
- White Sucker



How Do We Collect Data?

1) Experimental Gill nets:

- Early spring (March) to capture pre-spawn Walleye and Northern Pike
- Early May to assess panfish population

2) Night-time boat electrofishing

- Late May for to assess Smallmouth Bass population



What's involved in sampling the fish populations?

- Set 24 gill nets starting at north end of lake and resetting south towards dam breast
- Seven nets/day, fish 24 hr periods, nets moved to new locations to sample all types of habitats
- Captured fish are measured, weighed, sexed and scales (game species) and pelvic fin rays (NP) are retained
- Representative number of Walleye were retained for age & growth analysis (otoliths)
- Clark boat outfitted with 6500W generator, sampling at night targeting along the nearshore areas (max 5' depth)



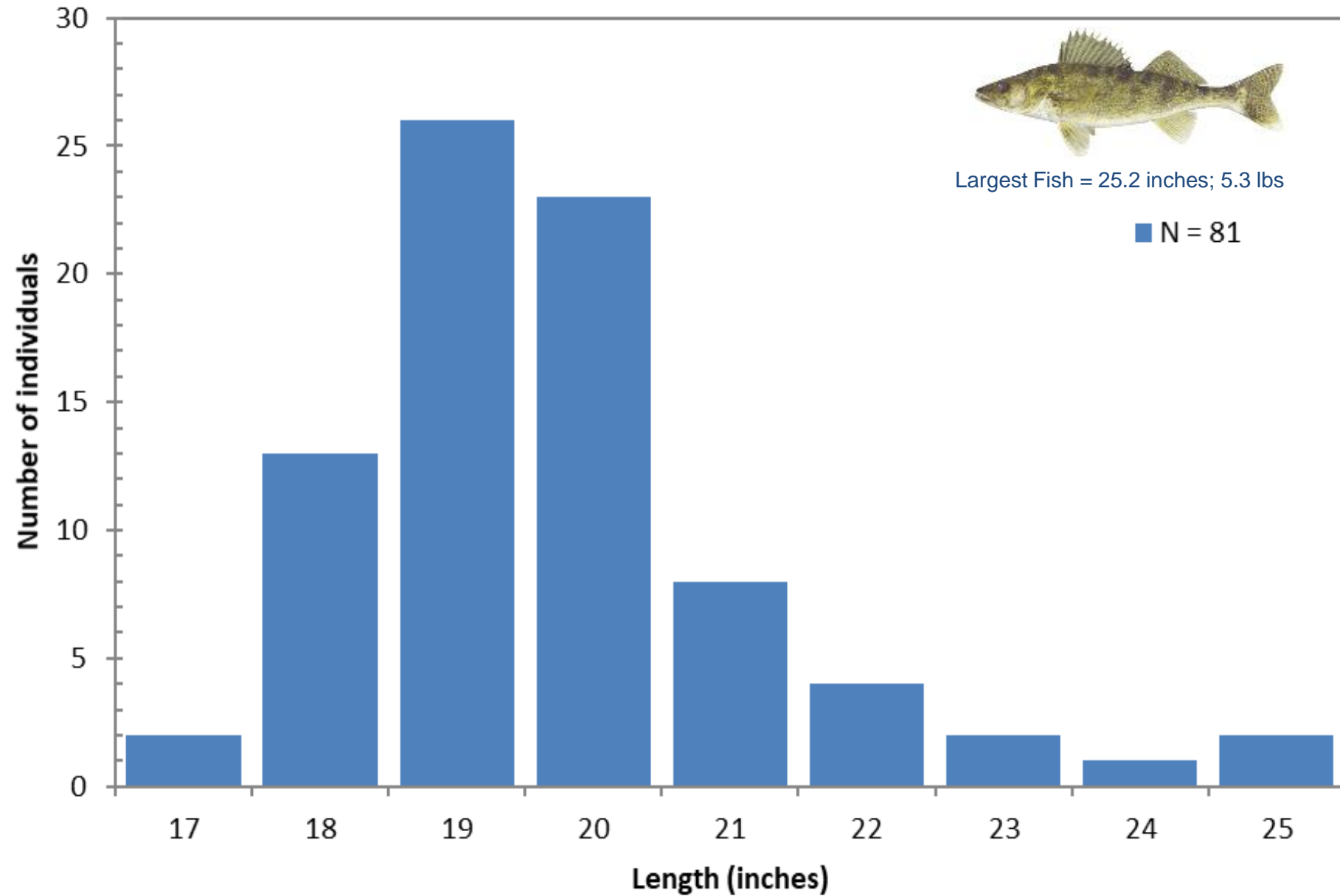
What did we catch in 2016?

Species	Number Collected	Size Range (inches)	Comments
Walleye	81	17 – 25	100% \geq 15 inches - <u>msl</u>
Northern Pike	81	13 – 35	80% \geq 24 inches - <u>msl</u>
Smallmouth Bass	73	7 – 21	81% \geq 12 inches - <u>msl</u>
Tiger Muskellunge	2	23 - 31	
Rock Bass	138	4 - 10	56% \geq 7 inches
Yellow Perch	1	11	
Brown Bullhead	1	13	
White Sucker	96	9 - 23	
Lake Trout	2	23 - 27	
Brook Trout - Hatchery	5	9 - 12	
TOTAL	480		

*Gill Net totals (April & May)



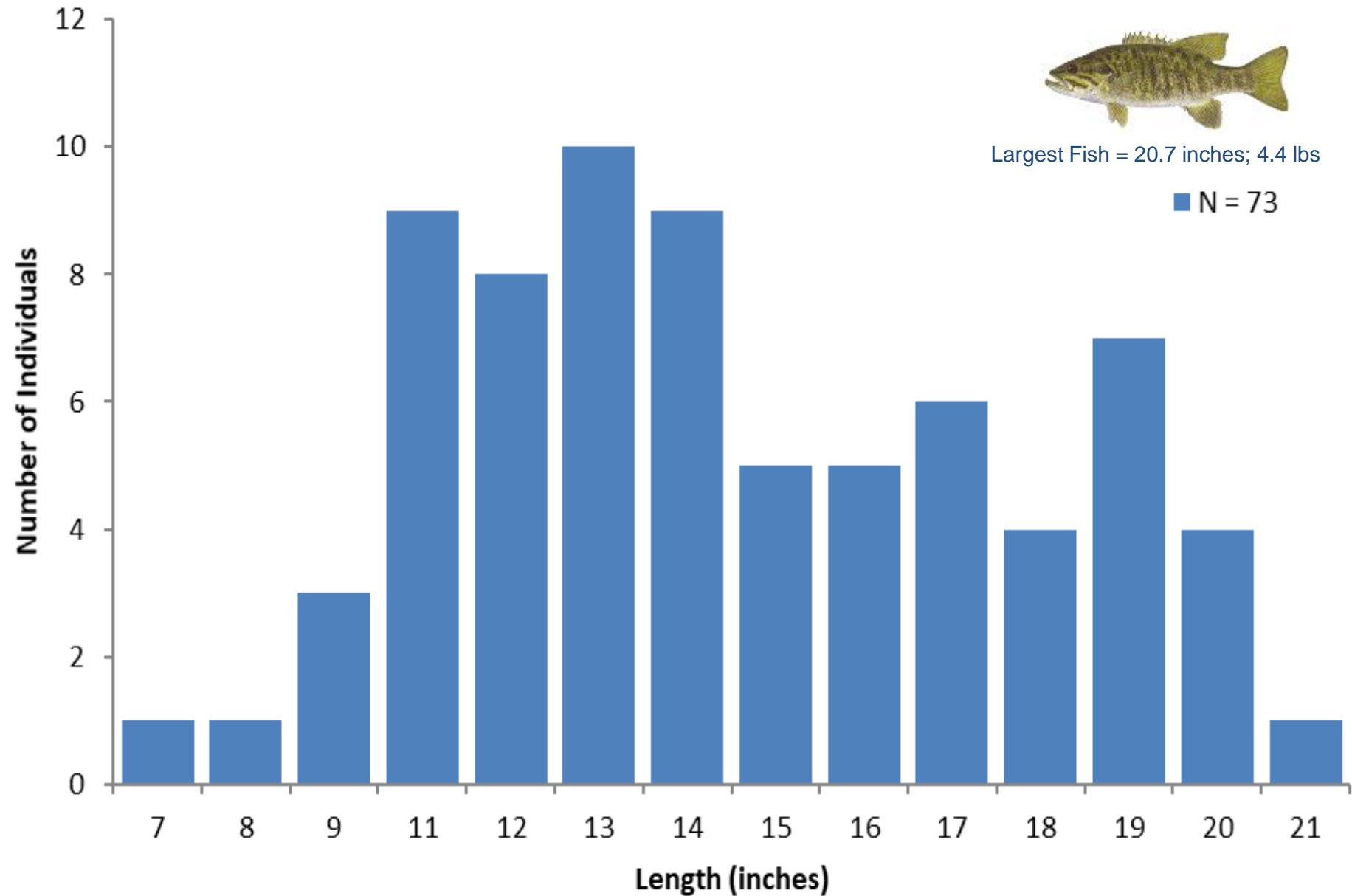
Walleye - Length frequency distribution



Historical Walleye Catch Rates

ANNUAL GILL NET CATCH RATE INDICES BY SPECIES AT <u>EAST BRANCH LAKE</u> (catch/100 gill net hours)																						
	1971*	1973*	1975	1981	1982	1983	1984	1985	1986	1987	1988	1989*	1989	1990	1991	1994	1997	2000	2004**	2009	*2016	Long Term Mean
Walleye	0	0	0	22.7	1.5	2	0.2	0.6	1.7	2.9	2.7	1.8	1.6	7.9	4.9	3.3	15.1	28.9	6.6	6.5	6.8	6.5
Smallmouth Bass	0	0	0	0	1.1	7.5	1.8	4.7	3.6	2.4	5.2	5.5	1.8	1.5	4.2	2	5.1	10.4	6.1	5.3	6.2	4.4
Northern Pike	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.4	0	0	6.9	5.7
Rock Bass	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	21.6	23.9	7.1	11.7	12.94
Tiger Muskellunge	0	0.7	3.7	0	0.4	0.7	1.1	0.4	0.6	0.9	0.2	4.6	0.7	1	0.2	0.2	0.2	0.7	0.2	0	0.1	0.9
Yellow Perch	0	1.5	2.1	9.1	57.3	190	51.7	73.9	94.1	59.9	78.7	7.8	80	47.5	11.7	11.4	1.6	0	0.2	0	0.1	43.3
Lake Trout	0	0	0	4.5	4.1	2.2	2.2	0.6	0.6	0	3.4	0.9	1.8	0.2	0	0.5	0.4	0	0.2	1.8	0.2	1.6
White Sucker	30.9	3.8	0	18.2	7.2	16.7	17.1	15.4	6.6	10.9	8.1	7.8	8.9	5.2	3.7	5.8	11.7	2.8	3.7	7.7	8.1	10.0
Brown Bullhead	3.6	0.4	1.6	13.6	35.1	16.7	53.9	24.2	9.8	6.8	2.3	0	1.5	2.9	0.7	0.4	3.2	0.4	0.5	0	0.1	9.4
White Crappie	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6	0	0.6
Pumpkinseed	0	1.5	0	4.5	0	0	0.4	0.4	0.2	0.2	0.2	0	0	0	0.2	0	0	0	0.3	0.6	0	0.9
Rainbow Trout	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brown Trout	0.9	0.7	1	0	0.4	0.6	0.4	0.6	0	0	0	2.7	0.9	0	0	0	0	0	0	0	0	0.9
Brook trout	27.2	1	2.1	0	0.6	1.3	0.4	1.2	0.2	0.4	0.9	2.3	0.9	0	0.4	0.5	0	0.2	1.8	1.2	0.4	2.3
Smelt	0	0	0	0	0	0.2	0	0.4	0	0.6	0.2	0	0.2	0.2	0	0	0	0	0	0	0	0.3
Yearly catch rate	63	18	11	73	110	238	129	122	117	85	102	33	97	66	26	24	38	65	43	31	41	
EFFORT hours	110	264	189	44	538	544	551	513	470	544	555	287	549	520	572	554	564	537	654	170	1179	
Number of fish species	4	7	5	6	9	11	10	11	9	9	10	8	10	8	8	8	8	8	10	8	10	
NOTE: * Gill Net Surveys Conducted by the Pennsylvania Fish & Boat Commission ** Gill Net Surveys Conducted by both the Pennsylvania Fish & Boat Commission & the Corps in 2004.																						

Smallmouth Bass - Length frequency distribution



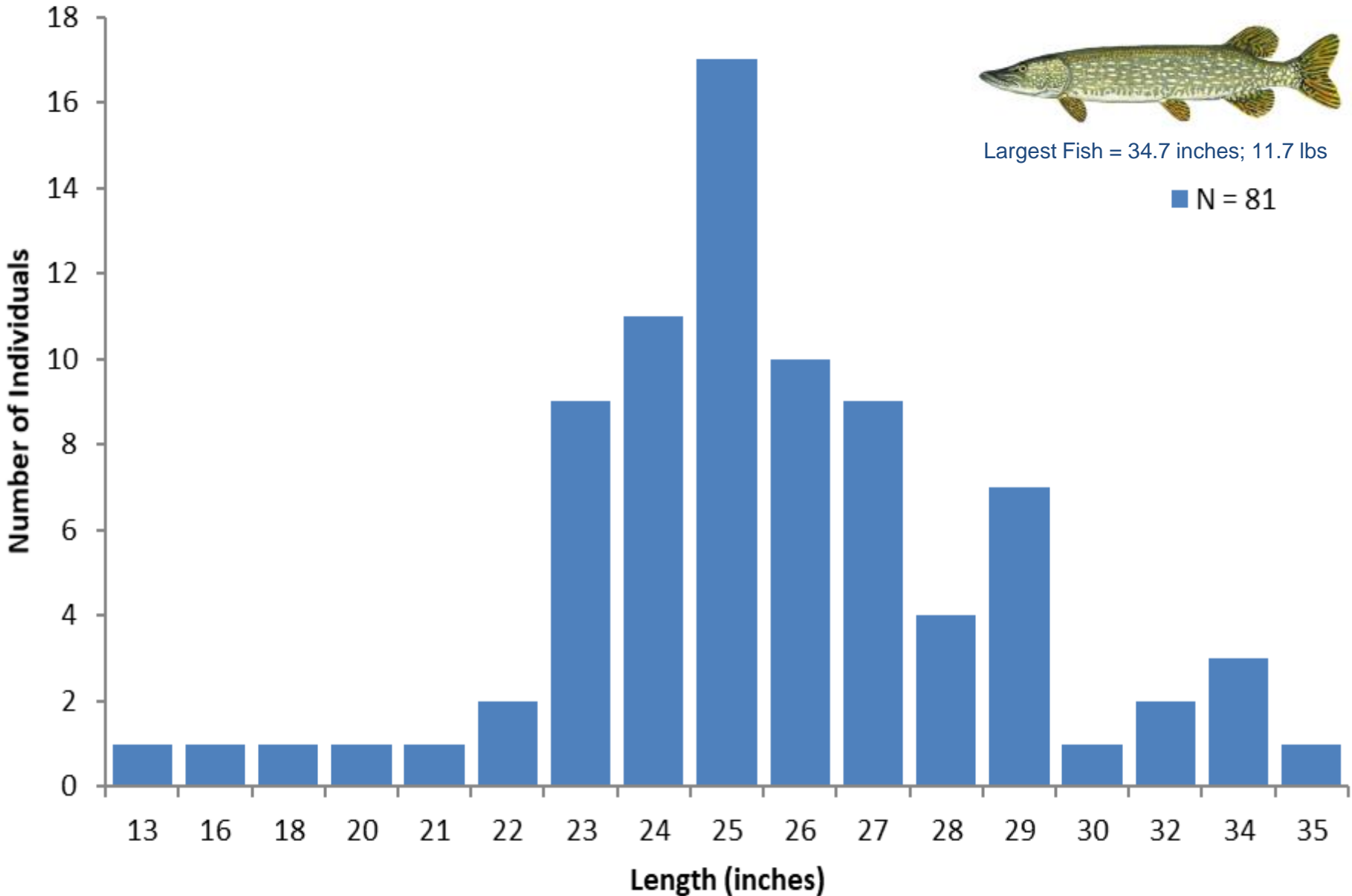
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Smallmouth Bass	0	0	0	0	1.1	7.5	1.8	4.7	3.6	2.4	5.2	5.5	1.8	1.5	4.2	2	5.1	10.4	6.1	5.3	6.2	
Northern Pike	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.4	0	0	6.9	5.7
Rock Bass	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	21.6	23.9	7.1	11.7	
Tiger Muskellunge	0	0.7	3.7	0	0.4	0.7	1.1	0.4	0.6	0.9	0.2	4.6	0.7	1	0.2	0.2	0.2	0.7	0.2	0	0.1	0.9
Yellow Perch	0	1.5	2.1	9.1	57.3	190	51.7	73.9	94.1	59.9	78.7	7.8	80	47.5	11.7	11.4	1.6	0	0.2	0	0.1	43.3
Lake Trout	0	0	0	4.5	4.1	2.2	2.2	0.6	0.6	0	3.4	0.9	1.8	0.2	0	0.5	0.4	0	0.2	1.8	0.2	1.6
White Sucker	30.9	3.8	0	18.2	7.2	16.7	17.1	15.4	6.6	10.9	8.1	7.8	8.9	5.2	3.7	5.8	11.7	2.8	3.7	7.7	8.1	10.0
Brown Bullhead	3.6	0.4	1.6	13.6	35.1	16.7	53.9	24.2	9.8	6.8	2.3	0	1.5	2.9	0.7	0.4	3.2	0.4	0.5	0	0.1	9.4
White Crappie	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6	0	0.6
Pumpkinseed	0	1.5	0	4.5	0	0	0.4	0.4	0.2	0.2	0.2	0	0	0	0.2	0	0	0	0.3	0.6	0	0.9
Rainbow Trout	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brown Trout	0.9	0.7	1	0	0.4	0.6	0.4	0.6	0	0	0	2.7	0.9	0	0	0	0	0	0	0	0	0.9
Brook trout	27.2	1	2.1	0	0.6	1.3	0.4	1.2	0.2	0.4	0.9	2.3	0.9	0	0.4	0.5	0	0.2	1.8	1.2	0.4	2.3
Smelt	0	0	0	0	0	0.2	0	0.4	0	0.6	0.2	0	0.2	0.2	0	0	0	0	0	0	0	0.3
Yearly catch rate	63	18	11	73	110	238	129	122	117	85	102	33	97	66	26	24	38	65	43	31	41	
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NOTE: * Gill Net Surveys Conducted by the Pennsylvania Fish & Boat Commission ** Gill Net Surveys Conducted by both the Pennsylvania Fish & Boat Commission & the Corps in 2004.																						

Northern Pike - Length frequency distribution



Largest Fish = 34.7 inches; 11.7 lbs

■ N = 81



Historical Northern Pike Catch Rates

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Rock Bass	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	21.6	23.9	7.1	11.7	12.94
Tiger Muskellunge	0	0.7	3.7	0	0.4	0.7	1.1	0.4	0.6	0.9	0.2	4.6	0.7	1	0.2	0.2	0.2	0.7	0.2	0	0.1	0.9
Yellow Perch	0	1.5	2.1	9.1	57.3	190	51.7	73.9	94.1	59.9	78.7	7.8	80	47.5	11.7	11.4	1.6	0	0.2	0	0.1	43.3
Lake Trout	0	0	0	4.5	4.1	2.2	2.2	0.6	0.6	0	3.4	0.9	1.8	0.2	0	0.5	0.4	0	0.2	1.8	0.2	1.6
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White Crappie	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6	0	0.6
Pumpkinseed	0	1.5	0	4.5	0	0	0.4	0.4	0.2	0.2	0.2	0	0	0	0.2	0	0	0	0.3	0.6	0	0.9
Rainbow Trout	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brown Trout	0.9	0.7	1	0	0.4	0.6	0.4	0.6	0	0	0	2.7	0.9	0	0	0	0	0	0	0	0	0.9
Brook trout	27.2	1	2.1	0	0.6	1.3	0.4	1.2	0.2	0.4	0.9	2.3	0.9	0	0.4	0.5	0	0.2	1.8	1.2	0.4	2.3
Smelt	0	0	0	0	0	0.2	0	0.4	0	0.6	0.2	0	0.2	0.2	0	0	0	0	0	0	0	0.3
Yearly catch rate	63	18	11	73	110	238	129	122	117	85	102	33	97	66	26	24	38	65	43	31	41	
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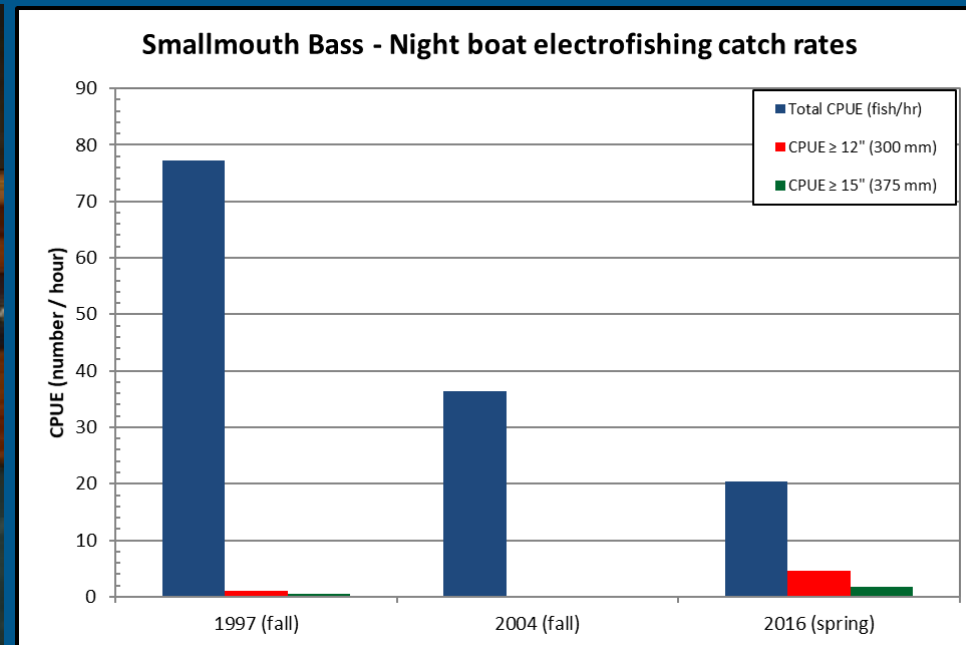
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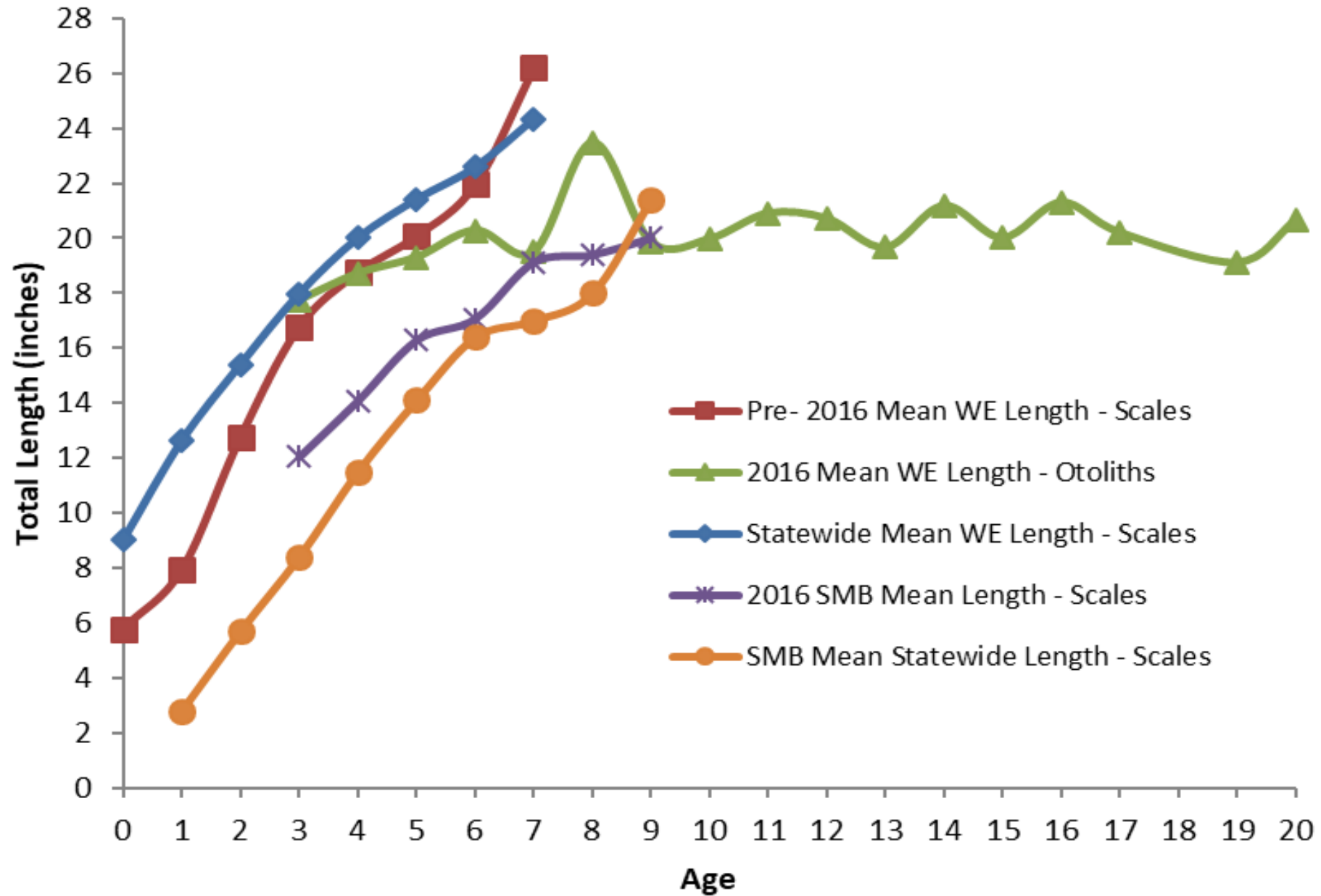
NTBEF Survey - Smallmouth Bass

Length Frequency Distribution and Catch Rates

Species	Number Collected	Size Range (inches)	Comments
Smallmouth Bass	36	4 – 15	22% \geq 12 inches - <u>msl</u>
Bluegill	57	2 – 9	54% \geq 7 inches
Walleye	10	7 - 9	12% of total Walleye
TOTAL	103		

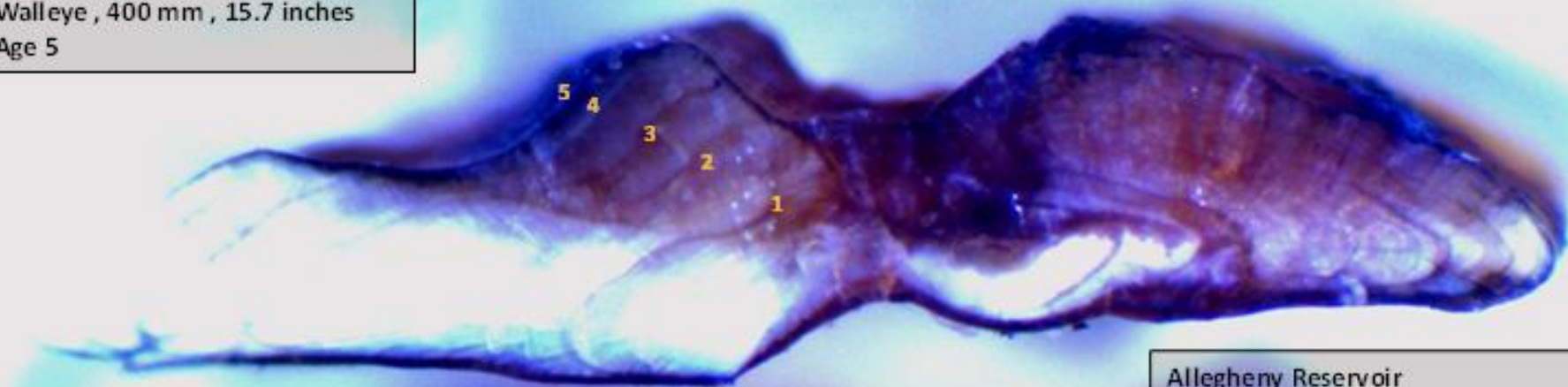


Length at Age - WE and SMB

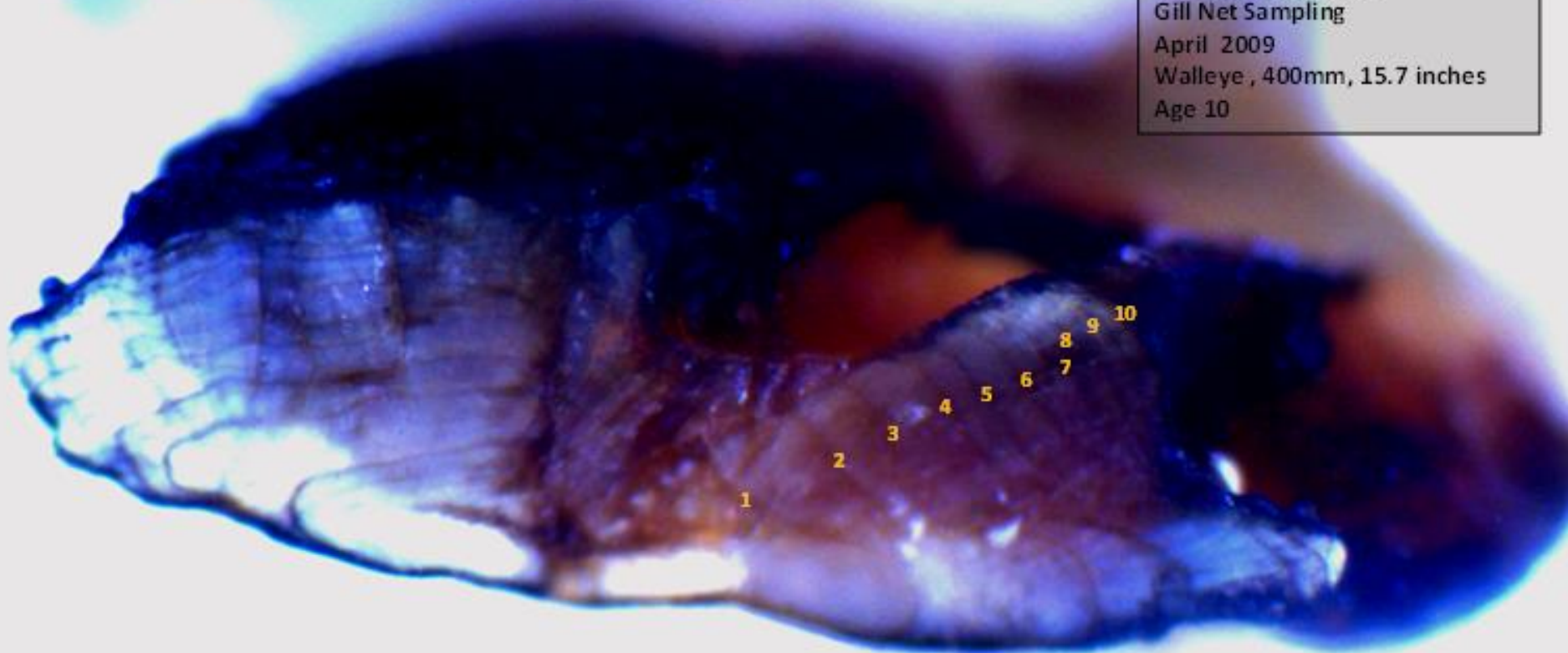


Otol

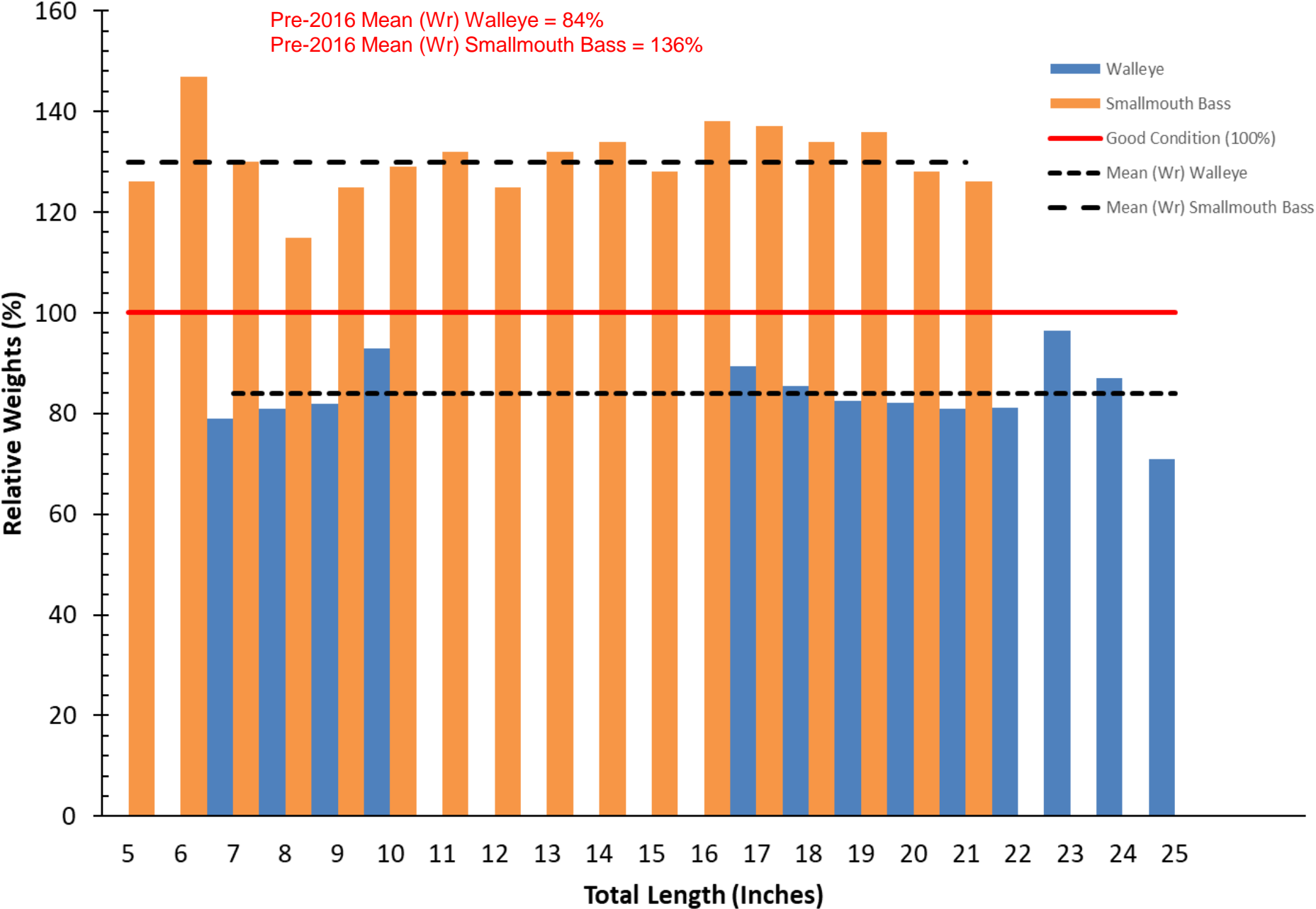
Allegheny Reservoir
Gill Net Sampling
April – May 2009
Walleye , 400 mm , 15.7 inches
Age 5



Allegheny Reservoir
Gill Net Sampling
April 2009
Walleye , 400mm, 15.7 inches
Age 10



Condition Factor (Wr) for WE and SMB - 2016 GN & NEF Survey



Water Quality & Pool Elevations

- Low fertility and productivity resulting from AMD tributaries, similar fish populations in Allegheny Reservoir and Tionesta Lake.
- Challenging habitat conditions, raising and lowering of water levels and lack of SAV resulting in limited diverse fishery populations
- Water quality conditions have improved over the last 20+ years. The lake also benefiting from Limestone treatment facilities on incoming tributaries (Swamp Creek).

What are the plans moving forward?

- Once construction is completed and lake is refilled to normal pool level, will allow sufficient time for fishery to stabilize for a few years, then return to conduct another routine lake survey.
- During this time period new habitat structures will be installed, opportunities to assess potential increases in fish populations, as a result.
- Targeted surveys to evaluate Lake Trout population (GN's summer & fall).



PFBC Cooperative Habitat Improvement Projects



Mike Swartz
Pennsylvania Fish & Boat Commission
Division of Habitat Management, Lake Section





Physical Fish Habitat

- Spawning/Nesting
- Juvenile Cover
- Ambush Cover
- Foraging
- Refuge



Project Selection & Priority List



Is there a viable warm water fishery?
Is it a public waterway?
Will it be worth the effort?



Is there a need for habitat improvement?



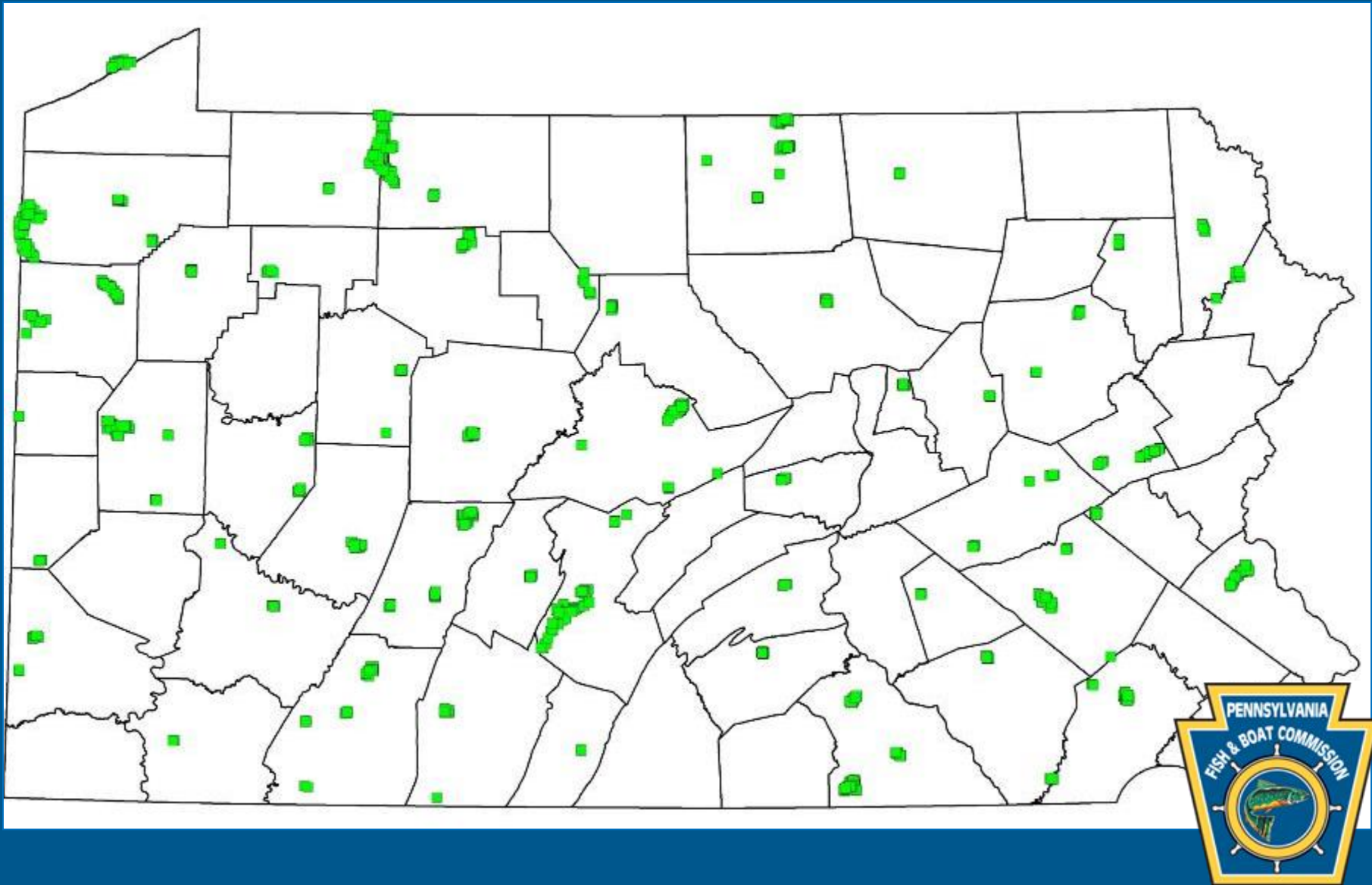


Impact of Drawdown

Ex. Dutch Fork Lake



Statewide Lake Habitat Improvement Projects



Cooperative Habitat Improvement Program (CHIP)

CHIP can provide at no cost to the applicant:

- ✓ Technical Assistance in design and construction.*
- ✓ Management Plans for long term projects (3 to 5 years).*
- ✓ \$\$ Assistance to purchase materials (\$3K per year 50/50).*
- ✓ Permitting Assistance of projects through GP-1/SPGP-5.*
- ✓ Use of PFBC equipment to install habitat structures.*

*Projects must be on waters open to public.





Volunteer Scale Habitat Projects



Volunteer Scale Habitat Projects

- 12-35 volunteers
- Materials: rough-cut hemlock lumber and concrete block
- Structures are typically built on site the day of the project
- Structures are typically placed by boat
- 5-100 structures per day









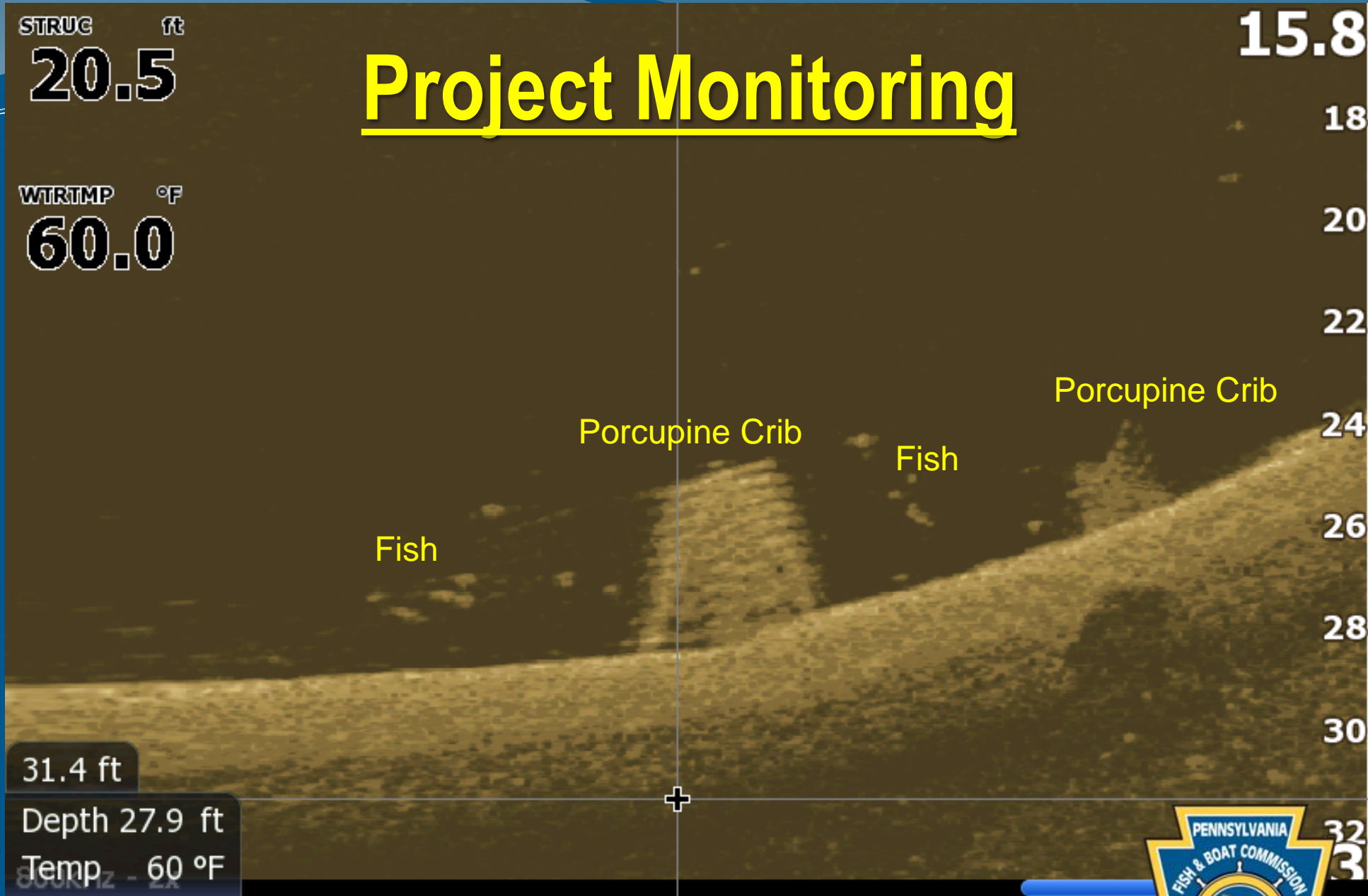
STRUC ^{ft}
20.5

WTRTMP ^{°F}
60.0

Project Monitoring

15.8

18
20
22
24
26
28
30
32
33



31.4 ft
Depth 27.9 ft
Temp 60 °F

Contrast
57%

Range
Less

Auto range

Range
More

New
waypoint...

Nothing Can Be Done without Funding/Materials!

\$55,510 PFBC Sinnemahoning Grant

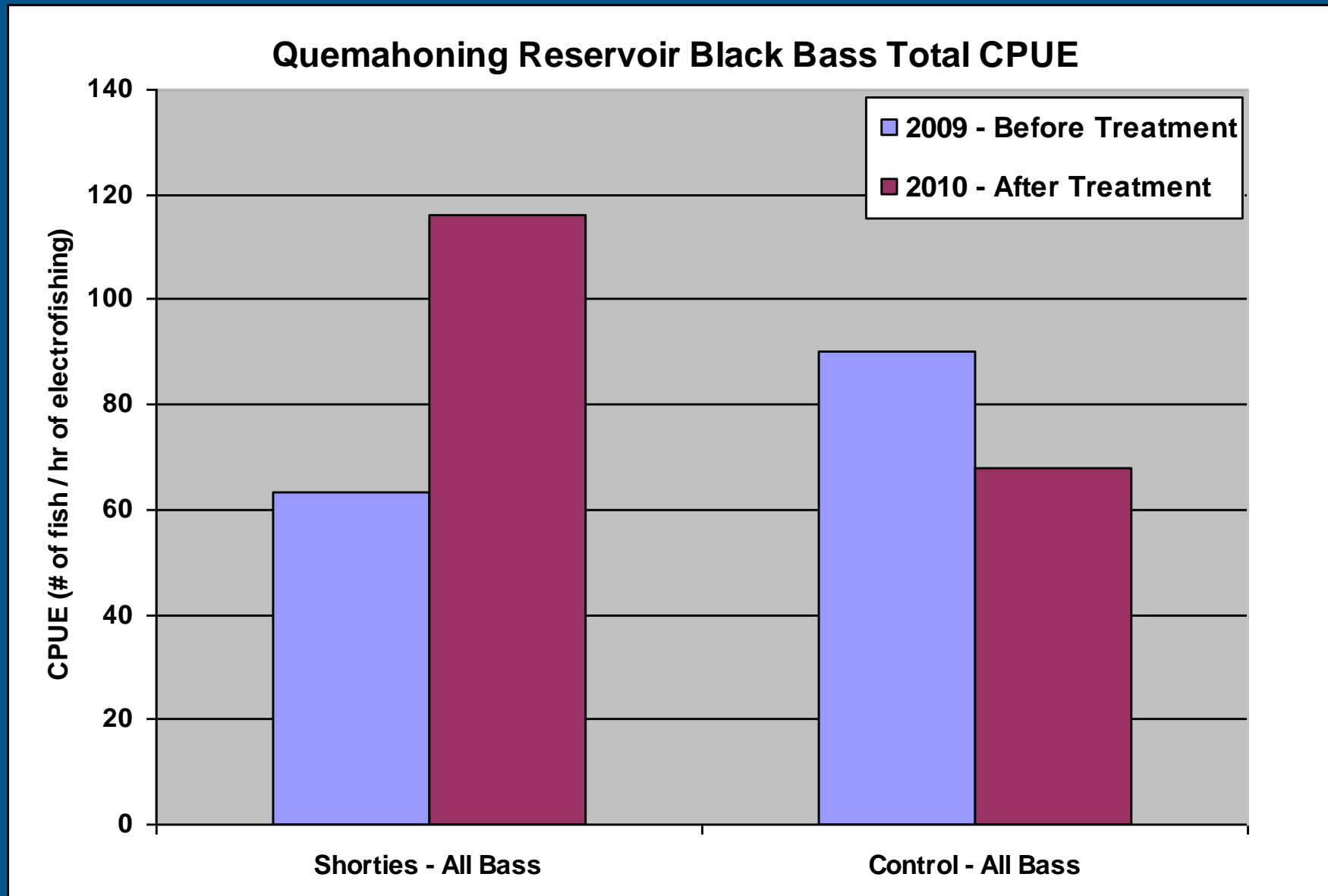
\$3,000 Annually from PFBC CHIP

Donated Block

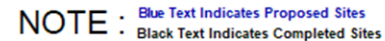
USACE Resource Budget



SVP Structure Electrofishing

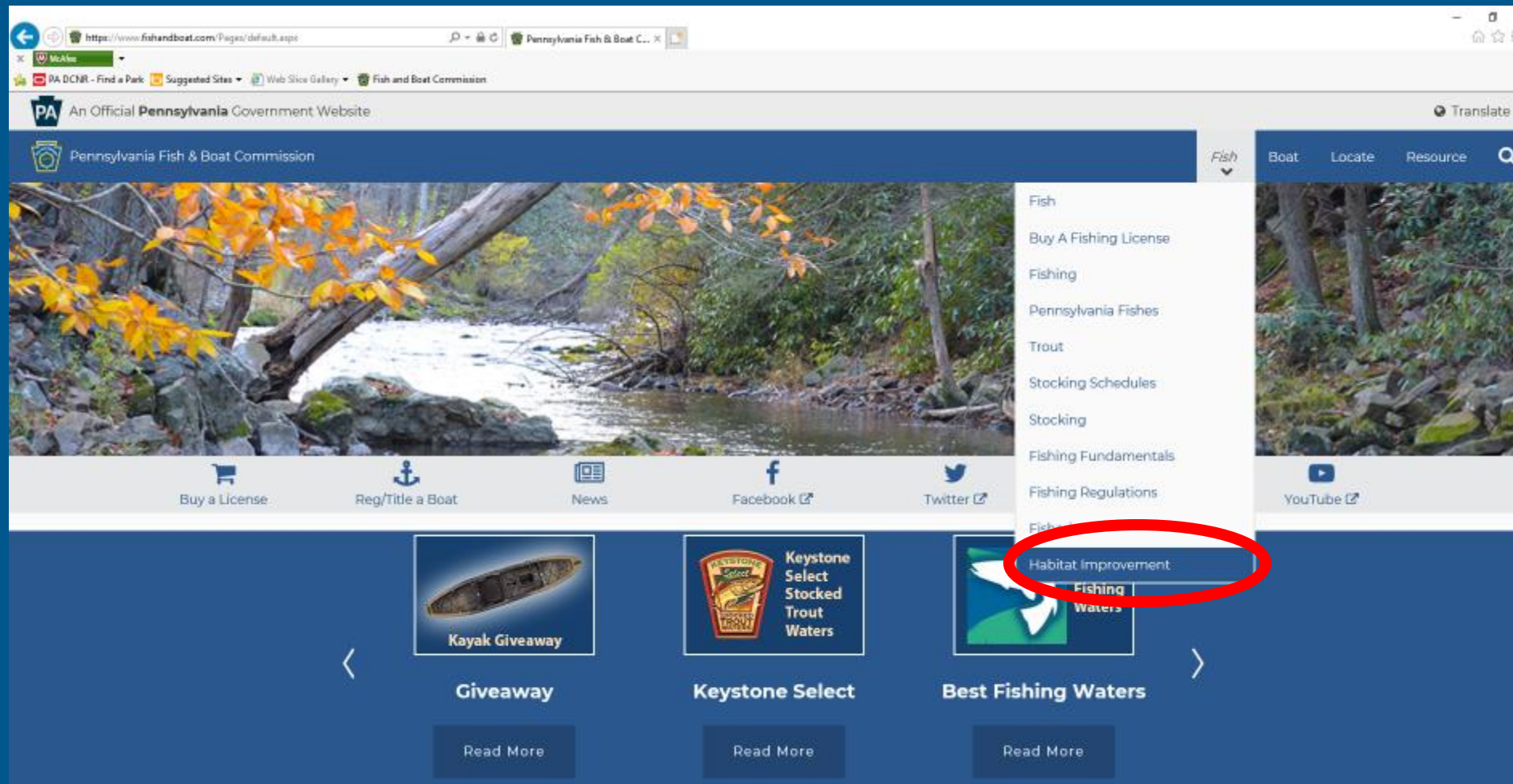


Warning



www.fishandboat.com/Resource/Habitat/Pages/LakeImprovementPlans

PFBC Website Habitat Page



https://www.fishandboat.com/Resource/Habitat/Pages/default.aspx

Habitat

McAfee

PA DCNR - Find a Park Suggested Sites Web Slice Gallery Fish and Boat Commission

Pennsylvania Fish & Boat Commission

Home > Resource > Habitat

HABITAT IMPROVEMENT

Habitat is the place where a plant or animal is naturally found. Improving habitats in and around waterways results in healthier, more diverse aquatic communities. In turn, that benefits those of us who enjoy Pennsylvania's water resources and the organisms that call them home. The Fish and Boat Commission works to improve habitat in a variety of ways, from assisting sportsmen groups and conservation on projects to improve fish habitat in local lakes and streams, coordinating the removal of dams and other blockages to natural fish movement and providing technical guidance on designing riparian buffers.

LAKE HABITAT MANAGEMENT

- LAKE HABITAT IMPROVEMENT MAPS**
- Lake Habitat Highlights (Spot Maps)
- Field Schedule
- Introduction to Lake Habitat Management
- Fish Habitat Management for PA Impoundments

A map of a lake area with various points of interest labeled. One point is labeled "Packer Camp". Another point is labeled "20 Rock Middle Hanger". A third point is labeled "15-6 of water". There are also numerical labels "42751-434" and "71924-485". The map shows the shoreline and some internal features of the lake.

[Cooperative Habitat Improvement Program \(CHIP\) Guidelines & Application](#)

[Technical Assistance Program \[TAP\] Guidelines & Application](#)

[Friends of Reservoirs](#)

[Pay It Forward PA!](#)

RESOURCE

[Fish Habitat Improvement Plans](#)

[Amphibians & Reptiles](#)

[PA Amphibians & Reptiles](#)

[Aquatic Critters & Habitat](#)

[Snake Photos](#)

[Frog & Toad Photos](#)

[Turtle Photos](#)

[Salamanders of PA](#)

[Amphibians & Rep](#)



PFBC Habitat Page Videos

- Pymatuning Res., Crawford Co.
 - <https://www.youtube.com/watch?v=oU9uZXbPTI8&feature=youtu.be>
- Beltzville Lake, Carbon Co.
 - <https://youtu.be/XVVGvr3bmXo>
- Presque Isle Bay, Erie Co.
 - https://youtu.be/_7IGReE6cx8
- Quemahoning Res., Somerset Co.
 - <https://youtu.be/XLrj4Oz4Ld4>



Questions

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Facebook: www.facebook.com/EastBranchLakeUSACE

QUESTIONS AND WRAP UP

